SEPTIC SYSTEM INSPECTION AND MAINTENANCE PROGRAMS FOR

hingham, norwell, and rockland.

august, 1982

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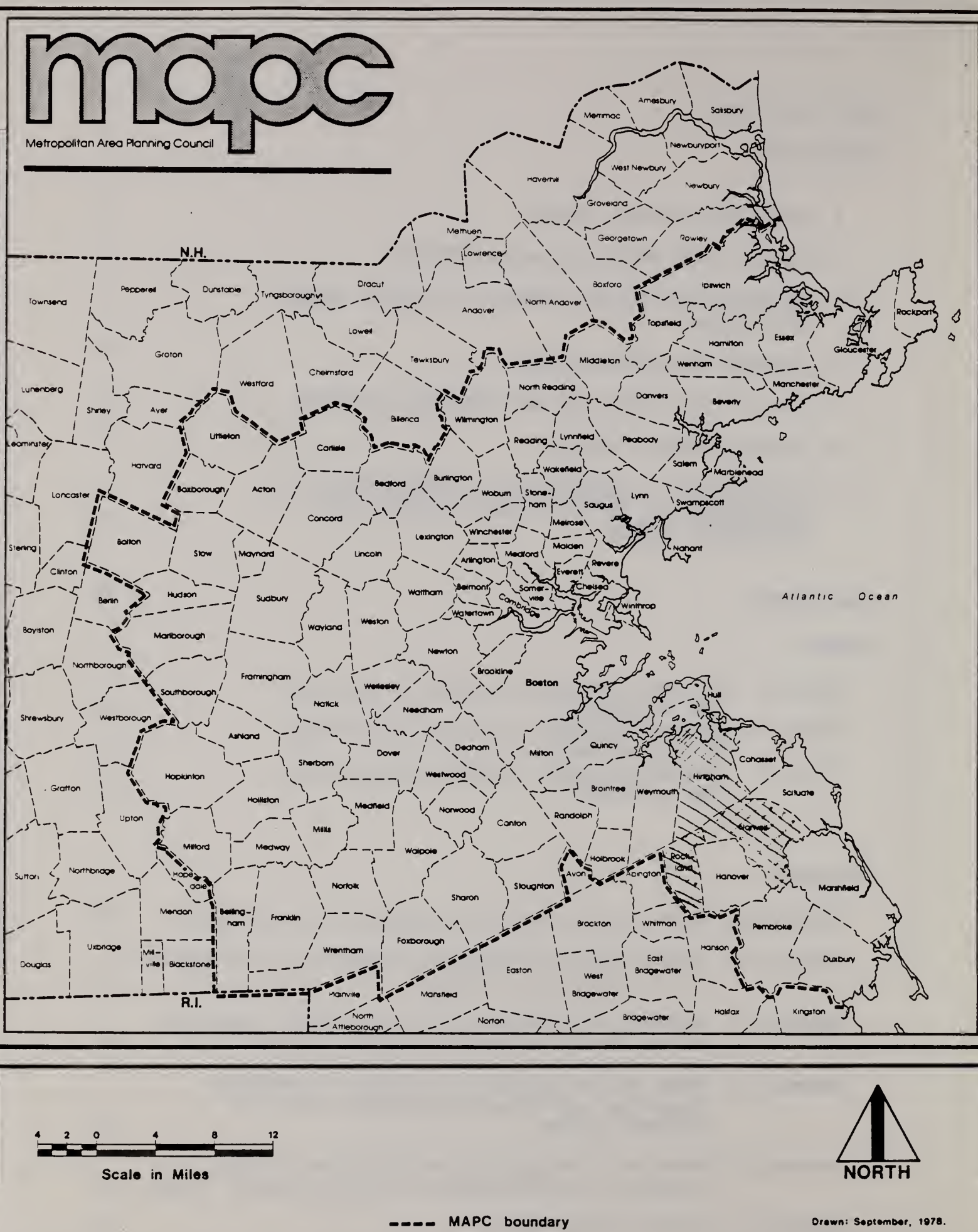
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Scale in Miles
NORTH
MAPC boundary
Drawn: September, 1978.

ABOUT THIS REPORT

This report was prepared at the request of the towns of Hingham, Norwell, and Rockland by the staff of the Metropolitan Area Planning Council under the supervision of its Executive Director. The Metropolitan Area Planning Council is the officially designated regional-planning agency for 101 cities and towns in the Boston metropolitan area. The Council helps its member communities plan in the areas of land use, housing, environmental quality, energy, transportation, and economic development.

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INTRODUCTION

In 1981, the Metropolitan Area Planning Council completed a report entitled "Protecting the Accord Pond Water Supply." The study investigated Accord Pond, a reservoir used by the Hingham Water Company for residents in Hingham, Hull, and Cohasset. According to the study, pollution from septic systems poses a threat to the pond's water quality. Consequently, it was recommended that all three towns within the Accord Pond watershed -- Hingham, Norwell, and Rockland -- develop a septic system inspection and maintenance (I & M) program.

This report begins with a discussion of the advantages and disadvantages of septic systems vs. sewers. Section II discusses septic system maintenance in general, while Section III outlines specific wastewater-disposal problems for the three towns. Findings and recommendations are presented in Section IV. Next, model septic system inspection and maintenance programs are introduced in Section V, with sample bylaws and regulations appended. Section VI discusses septage disposal. The concept of inter-municipal administration and enforcement of I & M programs is introduced in the final section of the report.

I. WASTEWATER - DISPOSAL METHODS

Sewage is disposed of either by public sewers or by private, on-lot, systems. Many communities, particularly those in urban areas, dispose of their wastewater at a public facility. Sewer systems carry the wastewater to a sewage-treatment plant. A network of collection pipes connect to individual households and businesses and then feed into large trunk sewers which carry the wastewater to the treatment facility. Most public sewers are designed for gravity flow, however, in some instances pumping stations are required.

A septic system, on the other hand, usually serves only one household and is located on an individual lot. It consists of a tank and leaching area, usually connected by a distribution box. The septic tank is a watertight structure (usually reinforced concrete) that receives wastewater from a home. While in the septic tank, the solid components of wastewater settle out to form a sludge layer (called septage) at the botton of the tank; lighter materials, such as fats and grease, float and form a scum layer. Sludge is partially broken down by bacteria, but in order to maintain proper operation of the system, the sludge and scum must be pumped out periodically.

A leaching system generally consists of perforated pipes or tiles that disperse effluent (liquid portion of the wastewater) through a large area underground. Some pollutants that are not removed by settling or by bacterial activity in the septic tank are decomposed or otherwise processed by the soil in a leaching area. The effectiveness of the soil's purification processes is determined by the type and condition of the soil, the amount of effluent discharged, the frequency of discharge, and the size of the field. A number of different leaching systems have been designed for specific site conditions, such as slope, soil, and drainage.

Most older on-site disposal systems are cesspools. Since cesspools do not treat wastewater as effectively as two-part systems, their installation is no longer legal.

A cesspool is a large concrete-, brick-, or stone-lined pit with open-jointed sides. The bottom can be of similar design or just earth. When wastewater enters a cesspool, solids are trapped while the liquid effluent seeps into the soil through the sides and bottom. Thus, a cesspool acts both as a filter, separating solids from liquids, and as a storage facility, holding sewage solids until they are pumped. Since a cesspool is less airtight, decomposition of the accumulated solids is slower. This results in a larger build-up of sludge in a cesspool than in a septic tank. Therefore, cesspools require more frequent pumping. And unlike a leaching system, which disperses conditioned effluent over a large area, cesspools release untreated wastewater into the soil immediately surrounding it. When solids accumulate, the soil may clog.

Properly functioning on-lot systems are beneficial to water supplies because they serve to replenish groundwater with recycled water used in the home. A malfunctioning system, however, threatens to pollute surface water supplies. Septic systems may also pose an immediate threat to groundwater if a septic system is installed in extremely permeable soil, such as sand and gravel. In this case, the sewage effluent that normally receives some treatment in the leaching field descends too rapidly through soil and does not get filtered adequately. Thus, many harmful components, such as nitrates, chloride, and phosphorus are likely to be introduced into groundwater. Groundwater, in turn, may be used for public supply via wells or via recharge to surface-water supplies.

Sewers, on the other hand, pose different problems with respect to water supplies. When an area is sewered, all of the water used in the home is usually transported out of the watershed from where it originated and is discharged into the ocean. Thus, it is lost as a source of recharge. This loss of groundwater recharge can be very significant. For example, a sewered town with a population of about 25,000 can lose 3.4 million gallons per day.[1]

Sewers can also be a source of pollution. If they are underdesigned, raw sewage may contaminate groundwater supplies, although surface waters are usually threatened the most. An underdesigned sewer system will not have the capacity to handle high wastewater flows, and surcharging will occur, especially during wet weather. If this surcharging condition is severe, wastewater may overflow through manholes and can then pollute groundwater or surface water.

Moreover, inflow, or water entering the system from roof drains, storm drains, or cellar-floor drains may also add to surcharging and overflow. (Although connecting cellar drains is illegal, to curtail, or even monitor this practice remains extremely difficult.)

Beyond this, sewer pipes that leak, usually older ones, may let groundwater into the system. This seepage, called infiltration, contributes to sewer surcharging and overflows. Perhaps more importantly, it can cause significant loss of groundwater available for supplies. In addition, the construction of sewers in wetlands often lowers the water table and funnels groundwater along the backfilled trench. Or, if backfill is compacted, sewers can act as subsurface dams to groundwater movement.

Exfiltration, however, the flow of sewage out of a pipe and into groundwater, poses the most serious groundwater pollution threat. But fortunately, it is the least common result of sewer leaks. Yet exfiltration has, in fact, polluted municipal wells. Still, infiltration is more likely to occur because of higher hydraulic head pressure outside the pipe. Exfiltration can only take place when the internal pressure of a sewer pipe exceeds the external pressure of groundwater, for example, when the water table falls below the level of the sewer. Thus, sewers usually threaten groundwater in terms of lowering the quantity, not the quality of supplies.

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1. Groundwater Protection Study for the Town of Wellesley, MAPC, July, 1982.

II. SEPTIC SYSTEM INSPECTION AND MAINTENANCE

Reasons for septic-system failure and tips on how to avoid it were discussed in Septic Systems: A Manual for Owners (MAPC, 1981). For the purpose of this report, portions of the manual are excerpted below.

A properly sited and sized system is the first step toward preventing malfunctions. The state's code (Title V) specifies the minimum size of septic systems, based on average water use and soil-percolation rate, the soil's ability to pass liquid. There are, however, other design considerations that may improve the functioning of on-lot-systems.

- Maximizing infiltration capacity. This can be accomplished by increasing the size of the leaching area or by using long, narrow trenches rather than beds.

- Alternating flow in the leaching area. Pumps or siphons can be used to alternate flow and to allow soil resting. Alternation is usually required for systems receiving more than 5000 gallons a day. An average house's septic tank holds 1000 gallons.

- Uniformly distributing effluent to the leaching area. A dosing system can be installed for uniform loading of the leaching area. A watertight tank is placed between the septic tank and distribution box, where sewage is accumulated and discharged intermittently to the leaching area. This is an effective way to avoid problems in wet soils.

- Installing the leaching area when soils are dry. Soil smearing and subsequent clogging can be avoided by ensuring that the leaching area is not excavated when the soil is wet. Installation during the spring or wet periods should be avoided.

- Proper grading. The septic tank should be level and the leaching area properly graded.

- Proper cover. A maximum of eight inches of soil cover should be placed over septic tanks, so they may be easily reached for inspection and maintenance.

- Maximizing depth to water table. By state law, the minimum permissible distance between the bottom of a leaching area and the highest groundwater level is four feet. Since groundwater levels fluctuate during the year, it is best to measure between December and May, when the level is usually highest. If a leaching area is too close to the water table, malfunctioning and groundwater pollution may result. Land with stony soil or a steep slope may not be acceptable for a leaching area, because effluent will move through the soil too quickly to be purified.

The reason for most septic-system failure is soil clogging. Commonly brought about by the improper installation or maintenance of a septic system, soil clogging is caused by an overloading of the leaching area. When this happens, the leaching area can no longer accept wastewater effluent and begins to fill up. The underground "ponding" of sewage encourages bacterial growth that produces a black, smelly sludge. As the sludge thickens, it may form a slimy mat that further seals off the leaching area from the surrounding soil. Eventually, wastewater may surface in the yard or back up into the home.

Some common causes of soil clogging include:

- Soil compaction or smearing. Smearing (smoothly sealing) the bottom or sidewalls of the leaching area during excavation for the system reduces the permeability of the soil.

- Size. If the septic tank is too small to accommodate the volume of sewage that is disposed, solids will not settle and decompose. Further, the effluent not only will overload the leaching area but also will clog the soil more readily.

- Accumulation of sludge. If a septic tank is not pumped periodically, the layer of sludge retained by the tank will accumulate and overflow into the leaching area, clogging the soil or backing up wastewater into the home.

A high water table is another cause of septic-system failure. During wet seasons, groundwater rises; if it rises into the leaching area, sewage may be forced toward the surface. This problem should have been anticipated during installation of the leaching system; it can be corrected only by relocating the leaching area at least four feet above the highest water-table elevation.

The roots of trees and shrubs in the leaching area can sometimes enter and block pipes. Destruction of such plants (including the roots) is usually required.

The homeowner can avoid the inconvenience and unhealthy consequences of septic-system failure by following a few simple but very important rules.

- Regular Maintenance. Cesspools and septic tanks should be inspected and pumped regularly to avoid soil clogging and sludge overflow. Pumping is usually required every 2 to 3 years. Systems should be checked yearly to see if more frequent pumping is needed A rule of thumb often used to determine pumping frequency is to wait until the septic tank is at least one-third full before pumping.

- Proper Disposal of Wastes. Certain materials, shown in the table below, should not be disposed of in a septic system. These materials can clog the system, are not biodegradable, or can kill the bacteria that normally treat wastewater.

Material	Problem	Proper Disposal
Grease, cooking oil	Causes clogging, back-up	Put in containers in garbage
Paper towels, plastic wrap, hair, cigarettes, tissues	Causes clogging, sludge build-up	Garbage
Colored toilet paper	Kills bacteria	Use white toilet paper
Paint thinner, paint, pesticides, disinfectants, acids, photochemicals, medicines, septic-tank cleaners	Kills bacteria, is not biodegradable, may contaminate groundwater	Garbage (check with local board of health or hazardous waste coordinator)
Motor oil	Causes clogging, kills bacteria, may contaminate groundwater	Gas stations (recycling)
Excess vegetable matter, coffee grounds	Causes sludge build-up	Garbage or composting

- Lawn Care. Certain outdoor activities can affect the leaching area.
  - -- Planting deep-rooted trees and shrubs near the system, since roots can damage or clog pipes. Willow trees are especially damaging, as they seek out pipes.
  - -- Driving over the leaching area. Packed soil will not readily accept or effectively process effluent; further, the weight may crush the pipes.
  - -- Piling snow or directing rainwater or water from swimming pools over the leaching area.
- Septic Tank Cleaners. Chemical septic-tank "cleaners" should not be used. They are not a replacement for pumping and may actually kill the bacteria in a septic system. Many chemical treatments contain organic solvents that are toxic and can contaminate groundwater. Proper maintenance should alleviate any need to "clean" the system.
- Water Conservation. Conservation is one effective way to prolong the life of a septic system. Too much water can flood a septic tank and flush solids into a leaching area. Water use can be cut by using watersaving devices, fixing leaks, running full dishwasher and washing-machine loads and spacing the loads, etc. Basement sumps should not be emptied into a septic system. In addition, rainwater and melted snow should not be allowed to pond over a leaching area.

III. WASTEWATER AND SEPTAGE DISPOSAL IN HINGHAM, NORWELL AND ROCKLAND

BACKGROUND

In 1976, MAPC completed an areawide wastewater-treatment management plan for 95 of its 101 member communities. The goal of this program, mandated by section 208 of the Water Pollution Control Act Amendments of 1972, was to "restore and maintain chemical, physical, and biological integrity of the Nation's waters," in order that "the discharge of pollutants into navigable waters be eliminated by 1985." As an interim objective, the program aimed to improve water quality enough to allow for fish, shellfish, and wildlife habitation and to provide recreation both in and on water by July 1, 1983 (Water Pollution Control Act Amendments of 1972, Public Law 92-500).

Steps taken by MAPC towards these ends involved identifying present and potential pollution sources, determining the level of water quality desired by citizens of the study area, and developing a water quality plan and program.[2]

As a follow-up to the 208 study, some communities hired consulting engineers to perform a more specific investigation of the town's sewerage needs and to propose recommendations for implementing the 208 plan. This study complied with federal requirements of the "201 Facilities Plan" (U.S. Environmental Protection Agency). 201 studies have been completed in Hingham and Rockland; Norwell's 201 plan is currently being developed.

NORWELL

208 Summary

Norwell lies in the North and South Rivers basin. All of its water drains into the North River. Based on the town's zoning, the 208 report identified surface waters in Norwell which could be affected by future growth. Jacobs Pond, Third Herring Brook, North River, Black Pond Swamp, Torrey's Pond, Second Herring Brook, Bound Brook Pond, and Accord Pond were all identified as prone to water-quality deterioration.

Most of Norwell's soil is classified as wetland or hardpan, so it has severe limitations for septic systems. In fact, the 208 study noted several chronic septic tank problems. The area in most urgent need of attention was the Assinippi area near Jacobs Pond in northwestern Norwell. MAPC stream sampling and surveys by Camp, Dresser & McKee in 1976 found some bacterial contamination, indicative of septic system failures. Other surface waters were also found to be of deteriorating quality. Third Herring Brook's water quality was rated fair-to-poor upstream and fair-to-good downstream. The brook's quality is of particular concern because Hanover's wells are located adjacent to the brook and probably induce infiltration from it. Accord Pond, located on the border of the three towns of Norwell, Rockland, and Hingham and used as a drinking water supply, had previously been closed due to bacterial contamination. At the time of the MAPC 208 report, the town had no municipal collection system or treatment for wastewater. A small

2. The North and South Rivers Basin: A Preliminary Report, Metropolitan Area Planning Council Water Quality Project. Boston: MAPC, 1976

package plant capable of treating 21,500 gallons per day served the town high school, library and the maintenance department. There was no disposal site for resulting sludge because the quantity had not at that time warranted need for one. Thus, the sludge was transported out of town. On-site systems handled all other wastewater treatment.

The 208 plan noted the following potential water-quality problems:

1) Zoning laws permitting commercial development at Queen Ann's Corner near Accord Pond were projected to promote rapid development of the area.

2) Soils around Bound Brook Pond were noted as having severe limitations for septic systems. Development in this area could threaten Bound Brook Pond with sedimentation from construction and nutrients from septic systems.

3) The town's small package plant's leaching fields extended under the high school parking lot, creating the potential for broken pipes and compaction of soil leading to possible leaching system failures.

MAPC proposed the following recommendations to solve the existing problems and to prevent future ones:

1) Take action on malfunctioning systems.

2) Begin a 201 facilities planning study to evaluate septage disposal and treatment alternatives.

3) Establish an inspection and maintenance (I & M) program for on-site systems including a public-education effort. This recommendation was reiterated for Norwell's portion of the Third Herring Brook watershed in MAPC's technical assistance report entitled Route 53 and the Third Herring Brook Watershed (1980).

4) Establish a sewer commission to manage any new package plants.

5) Evaluate the 208 land-use recommendations, and refine and develop an action program for these recommendations with the aid of MAPC.

6) Consider rezoning for low residential density in areas where needed.

7) Construct small package plants with limited local sewering if severe septic system malfunctioning continues.

201 Summary

Norwell's 201 Facilities Plan is currently being prepared by Linenthal Eisenberg Anderson, Inc. (LEA). The plan has three phases:

1) Assessment of current and future conditions.

2) Development and evaluation of alternatives.

3) Selection and recommendation of wastewater/septage-management plan.

Phase I has been completed, and Phase II is scheduled for completion by September, 1982. According to Phase I of the study, five septic-system problem areas exist in the town. LEA's questionnaire to all Norwell residents indicated the following problems:

1. Norwell Homes (off Grove Street, in northwestern Norwell: 31 problems, 7 septic-system repairs, and 12 individual problems reported.

2. Brantwood Manor (off Washington Street, west Norwell): 7 individual problems, 6 neighbor's problems, 1 repair reported.

3. Jacobs Lake Shore: 10 individual problems, 5 neighbor's problems, 4 major repairs reported. Eutrophication of Jacob's Pond is of particular concern in this area.

4. Washington Park/Ridge Hill Road (between High Street and Washington Street): 15 individual problems, 8 neighbor's problems reported. Nitrate levels in town wells near this development, which may be attributed to septic-system leachate, have raised concerns about this area.

5. Brigantine Circle/Masthead Drive (south Norwell): Approximately 15 percent of all residents reported septic system problems, while 8 reported neighbors had problems, and 8 sites had major septic system repairs. Poor soils and high groundwater were cited as reasons for failures.

Phase II of the 201 plan, which is nearing completion, presents several wastewater management alternatives for alleviating these problems in Norwell. Rehabilitation of septic systems, as an alternative to sewering, is being given serious consideration. Septic systems in problem areas would be replaced with a 1500 gallon septic tank and a new leaching area. Although funding may be provided by the state and federal government (up to 90 percent of rehabilitation cost), the status of these funding programs is uncertain at this time.

Gravity sewers are being evaluated for all problem areas except Jacob's Lake Shore, where variable topography precludes gravity sewers. Another option being considered is to combine Norwell Homes, Brantwood Manor, Ridge Hill Road/Washington Park, and Jacob's Lake Shore into a communal wastewater system and treat the sewage at a new in-town facility. Or, the sewage could be piped to an out-of-town facility.

According to Bruce Thibideau, LEA project engineer, Phase II will probably contain a preliminary recommendation that the town adopt a septic system rehabilitation program rather than sewering. Final recommendations are pending the results of an in-depth study of rehabilitation constraints in some areas.

It is also quite possible that an in-town septage-handling facility will be recommended.

Septage Disposal

According to the 208 Regional Septage Disposal Alternatives Study,(MAPC, 1977), Norwell generated 3300 gallons of septage per day (gpd) or 1,190,000 gallons per year (gpy). The town was predicted to generate 3800 gpd and 1,380,000 gpy by 1995. At the time of the septage study, the town reported that septage was disposed of at an unknown site. A survey conducted by the Massachusetts Division of Water Pollution Control indicated that Norwell's septage was disposed of at an MDC facility.

LEA reported, in its September, 1981 newsletter on the Norwell 201 plan, that septage collected by local haulers was disposed of at private out-of-town sites licensed by the state. However, no tracking system exists to confirm actual septage-disposal sites. One option previously available to local haulers, the Brockton wastewater-treatment plant, has recently been closed to Norwell.

As part of Norwell's 201 plan, LEA is evaluating septage-management alternatives. According to Bruce Thibideau, about five sites in Norwell have been examined for a septage facility. The most promising site to date is located across from the town garage, on the south side of Main Street (Route 123). Septage-sludge beds would be located on the north side of Main Street, behind Osborne School, where a force main from the Junior High School currently discharges to the sludge beds.

The advantage of these sites is that they are currently owned by the town. A potential problem exists because the site is within the Third Herring Brook watershed. LEA will be conducting a more detailed hydrogeologic investigation to evaluate the impacts of the disposal on the recharge area of Third Herring Brook aquifer.

ROCKLAND

208 Summary

Rockland, like Norwell, is within the North and South Rivers Basin. The major surface waters in Rockland, according to the 208 study, are Studley's Pond, Cushing Brook, French Stream, and Accord Pond. A large percentage of the town's soil is hardpan or wetland. According to a U.S. Department of Agriculture water-planning Study (1982), 54% of Rockland's land area has severe limitations for septic systems. About 30% of the town was classified as wetlands and floodplains.

The 208 plan reported that five areas had persistent septic system problems, mainly due to wet soils. Six additional locations reported occasional problems. MAPC's water-quality sampling program identified bacterial contamination. The suspected source was a large development on Pond Street, located south of French Stream. The above septic system problems were cited as likely causes of degrading surface-water quality in the area. Studley's Pond and French Stream both rated poor quality.

According to the 208 plan, the center of town, representing 35% of the town's population, was served by a sewage-treatment facility. The activated-sludge system was designed for treatment of 1 million gallons/day (mgd) and was handling 840,000 gallon/day (gpd) in 1976. After treatment, the effluent was discharged to Mill Brook, a tributary to French Stream, the most severely degraded water in the North and South Rivers basin. Sludge was transported out of town. Additional septage-receiving tanks (22,700 gal. capacity) were proposed for the treatment facility.

The remainder of the town used on-site systems for wastewater disposal -- either septic tanks or cesspools. Septage from the private systems was pumped by 11 licensed pumpers. Only four used the local sewage-treatment plant (loads were limited to 1/day for each pumper). The remaining pumpers hauled septage out of town. Sludge treated in-town was transported to the landfill in the southern part of town near French Stream.

The 208 plan examined existing conditions and proposed changes in the town in relation to future water-quality problems. The following potential problems were noted:

1) The proposal to increase the septage handling facility could cause stream bank erosion, wetlands flooding (from an additional 1.5. mgd discharge), and possible toxicity from chlorine and nitrogen by-products. It could also create a bypass of wastewater if holding tanks are inadequate.

2) If no changes were made in current zoning bylaws, failing septic systems are likely to continue.

3) Sludge deposited at the landfill could cause water-quality problems from leachate.

4) In 1976, there was no protection of wetlands, floodplains or watershed areas. Of particular concern was the watershed of the town's reservoir off Hingham Street.

MAPC recommended several solutions to existing and potential problems:

For wastewater treatment -

1) Consider extending sewer service to areas with persistent septic system problems, especially the large area south of French Stream.

2) Initiate an Inspection and Maintenance program (I & M) including public education for septic systems in unsewered areas.

3) Expand existing wastewater-treatment facilities to include septage-receiving tanks, and provide septage treatment for the town's unsewered population.

For industrial wastewater -

1) Adopt MAPC Sewer Use Bylaws to maintain treatment plant efficiency and regulate installation of sewer connections.

2) Conserve or recycle water.

3) Require new industry to discharge to the sewer system.

Preventive land use controls -

1) Delineate and enact wetlands/floodplain district; protect water supply reservoirs.

2) Identify water-resources protection district to protect surface water and groundwater.

3) Enact zoning bylaws (or rezone existing areas) to minimize threats to groundwater-recharge areas.

201 Summary

The major septic-system problem area, defined in Rockland's 201 plan, was the area bordering Upper French Stream, between West Water Street and Salem Street. Septic tank overflows caused pollution to French Stream and ultimately, Studley's Pond.

The following conclusions and recommendations are taken from Metcalf & Eddy's Report to the Board of Sewer Commissioners of Rockland on the Rockland Facilities Plan (1976).

Conclusions:

1. Sections of Rockland are experiencing septic tank failures which, in turn, contribute to the contamination of Rockland's water courses.

2. The existing sanitary sewer system has adequate capacity for long-range future sewer extensions.

Recommendations:

1. Systematic sewer expansion should take place and residents should be encouraged to connect to the system if available.

2. The Town of Rockland, in conjunction with Abington, should make the necessary provisions to include a portion of North Abington in the Rockland sewerage system.[3]

The town of Rockland is following the recommendations of the 201 study. Almost the entire town is proposed to be sewered over the next ten years. About half of the town, mostly the central and southern portions, have been sewered to date. The town's sewage treatment plant, constructed in 1964 and designed for an average flow of 1.0 million gallons per day, has been upgraded to service a 150 percent increase in average design flow (2.5 mgd) and to provide advanced wastewater treatment for phosphorus and nitrate removal. In the design of the upgraded facility, future flows from Abington were taken into account. However, the town of Abington has not yet voted to connect to the Rockland facility. Thus, at a peak design flow of 6.0 mgd, there is more than adequate capacity to accommodate all of Rockland's future wastewater needs.

3. Report to Board of Sewer Commissioners, Rockland, Massachusetts on Rockland Facilities Plan. Metcalf & Eddy, Inc. Boston: 1976.

Septage Disposal

Until recently, most of Rockland's septage was disposed of at the town's sewage-treatment plant. Septage was introduced into the treatment process through a pumping disposal trough at the head of the grit tank. From there, the septage was treated, along with wastewater, through a system consisting of primary settling tanks and an activated sludge/aeration system.

Septage disposal was discontinued at the plant during expansion and improvement of the facility, which was completed in June of 1982. Currently, the advanced treatment, consisting of a suspended growth denitrification process, is not accepting septage until holding tanks are constructed. The 201 facility plan recommended that no more than four turckloads of septage per day be disposed of at the plant. The Sewer Department plans to limit septage disposal according to the plant's treatment capability, which has yet to be determined. In any event, only Rockland septage will be accepted. However, if sewer expansions are built as proposed, the need for septage treatment will be minimal in the near future.

HINGHAM

208 Summary

Hingham lies in the Weymouth basin. The town has an abundance of surface-water resources in the form of rivers and ponds, including: Old Swamp River, Plymouth River, Cushing River, Crooked Meadow River, Fulling Mill Brook, Accord Brook, Accord Pond, Eel River, Bound Brook, Weir River, Triphammer Pond, Weymouth River, Back River, and French River. Extensive wetland areas border the water courses. Most soils are classified as wet, shallow hardpan, and bedrock.

In 1976, 80% of the population used septic systems and cesspools for waste-water disposal. The remaining 20% of the town was served by the Southern Metropolitan Sewerage District of the Metropolitan District Commission.

Septage was disposed of a "night soil" facility receiving chamber, off Downes Avenue in northwestern Hingham that discharged into the Metropolitan Sewer District (MSD) sewer line. Septage disposal was also discharged into local sewers or to Nut Island treatment plant in Quincy. Sludge was chlorinated and discharged to Boston Harbor on the outgoing tide. One industry, Merriman, Inc. was permitted to discharge into Weir River.

Gardner Street, Library Pole Hill, and four areas in North Hingham had been identified as septic system failure areas. Probable causes of these failures were poor soil conditions, age of systems, and inadequate maintenance.

Deteriorating water quality in some of the town's surface waters was probably caused, at least in part, by these septic system failures as well as sewerage overflows. Eel River was found to contain high nutrient levels which, in turn, contributed to eutrophication of Cushing Pond. Weymouth Back River was rated fair quality. Frequent bypasses and overflows from the Stodders Neck Pumping Station released raw sewage into this river course. Gulf River was rated good quality upstream, but only fair quality downstream.

In 1976, several potential problems were imminent. The 208 plan noted them:

1) After December 31, 1979, the MSD would stop receiving Hingham's septage. An alternative septage-treatment facility would have to be found.

2) Care would have to be taken to avoid the problem of more industries coming into the town without precautions to prevent pollution.

3) The town's prime aquifer-recharge area was not protected, and because of its suitability for development, could be threatened by future growth.

4) Precautionary measures would have to be taken to protect groundwater. Also, two surface-water reservoirs and wells owned by the Hingham Water Company had not been adequately protected.

As a result of the 208 study, MAPC recommended the following:

Wastewater treatment -

1) Initiate 201 facilities plan to evaluate:

   a) alternatives to alleviate water problems caused by malfunctioning septic systems

   b) septage treatment and disposal alternatives for unsewered population

2) Begin an I & M program for on-lot sewage-disposal systems including a public-education program. A mandatory I & M program should be considered.

Industrial discharges -

1) Adopt sewer-use bylaw as stringent or more stringent than the proposed sewer-use law developed by MDC. The drain layer's manual should also be adopted to provide consistency in sewer connection construction.

2) Assume new industries will discharge into sewer system; encourage conservation and recycling of process wastewaters.

3) Monitor industrial discharges into ground to protect groundwater, especially near public wells.

Preventive land use -

1) Extend floodplain district to include unprotected wetlands - adopt watershed protection district especially to protect Accord Pond.

2) Enact cluster zoning.

3) Delineate aquifer-recharge district for protection.

4) Rezone for only low residential density.

201 Summary

Hingham's 201 Facilities Plan was prepared by Metcalf & Eddy consulting engineers in 1980.[4] At the time of the 201 plan, the town's sewered population was approximately 5600, or about 25 percent of the total population. The rest of the town was served by on-site disposal systems, either cesspools or septic systems.

As a result of Metcalf & Eddy's 201 plan, four areas in Hingham were identified as having major septic-system problems:

1) Bonnie Brier Circle Area

2) North Sewer District

3) Liberty Pole Development

4) Accord Pond Area

Overall conclusions of the 201 report were as follows:

1. Sewers should be provided in the Bonnie Circle area, which was identified as having immediate needs.

2. Sewers should also be extended in phases in the North Sewer District to ensure logical, controlled expansion of the system, according to need.

3. On-lot systems should be retained in all areas where they are viable in the long term.

4. In order to increase the viability of existing and future on-lot systems, it is recommended that the town take the following actions:

   a. Consider increasing minimum residential lot size in undeveloped areas not proposed for public sewerage;

   b. Mandate or encourage the installation of water-saving devices in new homes;

   c. Encourage or require operation and maintenance practices for septic-tank pumping (including a public-education program).

Septage Disposal

According to the MDC Sewerage Division's Annual Report (1981), Hingham has a contractual agreement, issued by the MDC on a yearly basis, for septage disposal. The agreement requires annual renewal for the town to continue disposing its septage into the MDC system. The town recently relocated its septage-disposal facility from the Downes Avenue site to a new location off Lincoln Street, adjacent to the North School property.

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[4] Draft Report to the Town of Hingham, Massachusetts on Facilities Plan and Environmental Assessment for Wastewater Management. Boston. Metcalf & Eddy, Inc., 198

The septage facility is simply an opening into the MDC sewer with a grit chamber attached that removes large-sized particles from the septage. The grit chamber must be cleaned periodically for proper functioning. After passing through the grit chamber, the septage is pumped through the Stodders Neck pumping station to the MDC Nut Island sewage treatment plant. According to the MDC Sewerage Division,[5] the MDC does not limit the volume of septage disposed of at the Hingham facility; the only stipulation is that the septage must be from Hingham.

Hingham's septage facility is open 24-hours a day to septage pumpers that are licensed by the Hingham Sewer Commission. Only licensed pumpers, which include some from out-of-town, are given keys to obtain access. All pumpers are required to pay a fee of $10 per truckload. Since there is no system to monitor use of the facility, the town must rely on the honor system in terms of the amount and origin of the septage disposed of there.

5. Personal Communication, Charles Lombardi, MDC Sewerage Division, Boston, MA. July, 1982.

IV. FINDINGS AND RECOMMENDATIONS

For the purposes of this study, septic-system problem areas were delineated for all three towns. In order to determine which areas are most critical for correction of septic-system problems, recharge areas of drinking-water supplies (aquifers and watersheds) were also shown (see Figures 1, 2, and 3).

HINGHAM

Findings

1. About 75 percent of the town's population, or 4800 homes, currently use septic systems for wastewater disposal. The remaining 25 percent of the town (about 5600 persons) is connected to the Southern Metropolitan Sewerage District of the Metropolitan District Commission. The sewered portion of Hingham is located in the Hingham Harbor area of North Hingham, referred to as the "North Sewer District."

2. Both the MAPC 208 plan and Hingham's 201 Facilities Plan recommended continued reliance on on-site systems where they are viable over the long-term. The plans also recommended that a septic system inspection and maintenance program be implemented. While the 208 plan encouraged the town to consider a mandatory program, the 201 plan emphasized public education, or a voluntary I & M program.

3. There are only two areas where sewers are proposed in Hingham: the Bonnie Brier Circle area (adjacent to the Weir River, near the Hingham/Hull line), and expansions within the North Sewer District.

4. Failing septic systems are of greatest concern where they are likely to affect water supplies. According to Figure 1, the following septic system failures occur within aquifer or watershed areas currently used for water supply, which are areas of critical concern:

   -- Gardner Street (Accord Pond watershed)
   -- Liberty Pole Development (Fulling Mill Pond watershed)

5. Septic systems located within the town's primary recharge areas, whether or not they are prone to failure, may be a source of groundwater pollution. Although these systems are beneficial insofar as they serve to recharge groundwater through their leaching areas, septic-system leachate, especially if it contains chemicals or hazardous wastes, poses a pollution threat. Thus, proper use and maintenance of septic systems in primary recharge areas is particularly important.

6. Hingham's septage is disposed of at a new septage-disposal facility located off Lincoln Street, adjacent to North School near the Weymouth Back River. The locked facility is open 24-hours a day to septage pumpers licensed by the Hingham Sewer Commission. Septage is discharged into a grit chamber, which removes large debris, before it goes through Stodders Neck Pumping Station to the Nut Island Sewage Treatment plant. Additional septage generated by an I & M program could be accommodated by this facility.

Recommendations

1. Hingham should begin a public-education program aimed at voluntary maintenance of septic systems. Septic system maintenance brochures should be sent to all septic system owners, along with property tax bills, water bills or some other townwide mailing. Other components of a public-information are included in Section V of this report.

2. Cesspools and septic-systems prone to failure should be upgraded. Funding may be available for rebuilding old systems or constructing new, innovative ones, such as communal septic-systems, through a Section 201 construction grant.

3. The voluntary I & M program should be monitored to gauge its success. Of the three monitoring techniques suggested in Section V of this report, the third is the most accurate. Since the Sewer Commission already licenses septage pumpers, the Commission could place a condition on the permits requiring that pumpers submit signed receipts from home-owners whose systems are inspected and pumped. Or, this requirement could be adopted through a Board of Health regulation. In any event, the signed receipt would serve as proof of septic system maintenance. The receipt could be used to establish a recording system to keep track of the number and frequency of pumpouts in the town.

   Another way of tracking pumpouts and, at the same time, monitoring septage-disposal, is to limit the septage facilities' hours of operation and hire a facility operator. The operator could be stationed at the facility to accept and record the pumpers' receipts and perhaps maintain the grit chamber as well. The town should consider raising its septage-disposal fee (e.g., from $10 to $50 per truckload) to help offset the cost of hiring an operator for the septage facility.

4. If the voluntary I & M program is not found to be effective, the town should consider adopting a mandatory I & M program. Since the recharge areas of drinking water supplies are the areas of critical concern, the mandatory program could perhaps be limited to only those areas as a first step. In order to implement this program, it would be helpful to obtain a precise delineation of the recharge areas so that the Board of Health would be certain of each household required to participate.

   Of the three mandatory I & M programs presented in this report, a program of private maintenance and municipal inspection is the preferred option. The major drawback to this option is the demand it would place on town employees. The administrative burden could be reduced if the cost of an inspector was shared by Norwell, Rockland, or another abutting community with the same needs (see Section VII).

5. In order to better regulate installation of new septic systems, the board of health should consider adoption of regulations such as the ones suggested in the Accord Pond study (MAPC, 1981).

ROCKLAND

Findings

1. Rockland has chosen to sewer areas identified as prone to septic-system failure. The most problematic area has been the nothwestern portion of town, in the vicinity of French Stream.

2. Approximately one-half of the town has already been sewered, and sewer expansions will continue over the next fifteen years for full sewer service to all areas in Rockland.

3. Rockland's sewage-treatment plant has recently been upgraded and expanded to provide advanced treatment (deni trification) for an average flow of 2.5 mgd and a peak flow of 6.0 mgd.

4. Rockland's sewage-treatment plant was designed to handle additional flows from Abington. Since the Town of Abington has not yet voted to connect to Rockland's facility, the plant has more than enough capacity to accomodate all of Rockland's wastewater needs.

5. Septage from the remaining on-site systems in Rockland has been disposed of at the town's sewage-treatment plant. Since construction of the recent plant improvements, septage has been transported out-of-town. Following completion of septage-holding tanks at the plant, septage disposal will be continued there, but quantities will be limited depending on the plant's capability to treat it. The 201 Facility Plan recommended that no more than 4 truckloads of septage per day be disposed of at the plant.

6. Since the town has made a commitment to install sewers throughout the town, septic system inspection and maintenance presents only a short-term problem.

Recommendations

1. A voluntary septic system inspection and maintenance program should be encouraged for the systems that will remain until all areas of the town have been sewered. The town should adopt one or more of the public-eductaion programs outlined in Section V .

2. Rockland should reconsider sewering its portion of the Accord Pond watershed. The board of health should investigate the on-site systems in this area to more accurately determine their long-term viability. If the systems can function properly with continued maintenance or upgrading (if necessary), and pose no pollution threat to the pond, they will serve to help recharge the water supply. Thus, from an environmental standpoint, retaining the septic systems in this area would be preferable to sewers.

3. The town should continue to accomodate septage disposal at its sewage-treatment facility. Holding tanks should be constructed, as planned, in order to accept all of Rocklnad's septage while sewerage expansion takes place. Septage disposal should be monitored to ensure that only Rockland's septage is being disposed of at the plant.

4. Rockland should continue to maintain its septage-disposal facility at the treatment plant, even after the town's sewerage system has been completed, in the event that it may be desireable to accept out-of-town septage in the future. Since septage-disposal sites are now at a premium, and more and more facilities are restricting septage from out-of-town, it may be economically advantageous to accept septage from neighboring towns. A certain volume of septage may also enhance the wastewater-treatment process.

5. Sewers that are proposed within Rockland's aquifer and watershed areas should be constructed with reinforced, sealed joints to avoid infiltration and exfiltration problems in the future. Sewers in these areas(see figure 2) will reduce recharge, but excessive recharge loss, as well as the threat of pollution, can be minimized if precautionary measures are taken. Industrial discharges into the sewer system should be carefully monitored to prevent disposal of hazardous materials into the system. Not only do hazardous materials pose a groundwater pollution threat, but they may disrupt the treatment process at the sewage-treatment facility.

NORWELL

Findings

1. Except for a small sewage-treatment plant that serves the town library, maintenance department, and high school, the entire town relies on on-site wastewater disposal. Continued reliance on septic systems is likely to be recommended in the town's 201 Facilities Plan, which is nearing completion.

2. There are five areas in Norwell that have experienced major septic-system problems. Although sewering these areas has been evaluated, LEA Engineers, the town's 201 consultant, is taking a closer look at the feasibility of rehabilitating the systems in these areas.

3. Two past MAPC studies, the 208 Areawide Wastewater Management Plan and the Third Herring Brook study, both recommended septic system inspection and maintenance. According to the town's 201 consultant, an I & M program will be crucial to the success of the 201 plan's recommendation for continued reliance on on-site disposal.

4. Continued reliance on on-site disposal systems, in conjunction with an inspection and maintenance program, will result in the generation of a large volume of septage to be disposed of. The town currently has no disposal facility and its major disposal site in Brockton has restricted out-of-town septage. Thus, the town's 201 consultant is planning to recommend a septage-disposal facility in Norwell. Siting of this facility is presently being evaluated.

5. Septic system problems are of particular concern where they occur within the town's aquifer and watershed areas. Figure 3 shows where septic system problem areas intersect with areas significant to water supplies. Maintenance of systems in these areas is particularly important.

6. The installation of new septic systems within the areas significant to water supplies may further increase nitrate levels in the town wells.

Recommendations

1. The town should institute a septic system inspection and maintenance program. Of the three options outlined in Section V, the one involving municipal inspection and private maintenance seems to be the most appropriate. Monitoring will be facilitated by the construction of a septage-disposal facility in the town. The town can require pumpers to submit receipts at the facility, showing the location of systems pumped. In this way, the town can track pumpout frequencies and ensure that only Norwell septage is being disposed of.

2. The town should adopt either a town bylaw or board of health regulations for septic system inspection and maintenance to enforce the program. The 201 Facilities Plan is considering a pumpout schedule of once every three years. The town can either phase the pumpouts in certain sections of the town or simply monitor pumping frequency over the first three years and send notices to those that have not had their systems pumped. The latter approach is probably the most workable, especially at the outset of the program.

3. The board of health should adopt strict standards for installation of new septic systems. The recommendations for board of health regulations contained in the Accord Pond report should be adopted by Norwell.

4. The board of health should conduct a public-education program to inform residents of the necessity of properly maintaining their systems and to discourage the use of septic tank cleaners. The board should also adopt regulations prohibiting the use of tank cleaners and the disposal of hazardous materials in septic systems.

5. The town should investigate the possibility of obtaining state and federal funding for septic-system rehabilitation. The MAPC would endorse funding applications for this purpose.

6. The town should consider adopting 2-acre zoning in aquifer-recharge areas as a way of limiting the nitrate loading from septic systems on groundwater.

7. The septage-disposal facility should be carefully sited to mitigate impacts on groundwater supplies.

V. SEPTIC SYSTEM INSPECTION AND MAINTENANCE PROGRAMS

Septic system maintenance makes economic as well as environmental sense. It is an inexpensive and environmentally-sound alternative to septic system repair or expansion of public sewer systems. A septic system maintenance program is a preventative approach to problems that might result from malfunctions. The primary goal is to periodically have systems pumped to provent sludge overflow and clogging of the leaching area.

There are two major components to an effective septic system inspection and maintenance program. The first is public education. The second is monitoring and enforcement by the town.

VOLUNTARY I & M PROGRAM

There are many ways to encourage local residents to maintain their system on a voluntary basis. The prerequisite to such a voluntary program is public education.

Public-Education Program

A public-education program could be carried out in a number of ways. Some ideas are presented below.

1. Distribution of Septic System Brochure. A septic-system maintenance brochure could be distributed by the board of health or other town officials. If the brochure is brief, perhaps it can be mailed to homeowners along with the water bill, tax bill, or town-meeting warrant. This way, the brochure could serve as an annual reminder that septic systems should be checked to avoid unnecessary expenses. The brochure could be distributed to new residents by the "Welcome Wagon," real-estate agents, or bank mortgage officers. Finally, septic system installers and licensed pumpers, who deal with homeowners when they should be most receptive to hearing more about maintaining their system, can be asked to distribute the brochure.

2. Press Releases. The board of health or conservation commission could periodically submit press releases to local newspapers as a way of informing townspeople about septic systems and the importance of maintaining them. The newspaper articles should also contain the Board of Health's telephone number, where further information can be obtained.

3. Local Schools. Septic-system maintenance brochures can be handed out to school children as part of a natural resources program (perhaps within the science department). The children, as part of their assignment, could be asked to go home and find out what their parents know about their system and could, in turn, show them the brochure.

4. Encourage Involvement from Septage Haulers. A meeting could be arranged between town officials and local private septage pumping/hauling companies to explore methods for encouraging homeowners to regularly inspect and service their septic tanks. Some of the options for discussion are listed below.

   Septage haulers could be encouraged to increase their advertising, particularly with respect to informing homeowners about protecting their investment in the septic system by regular maintenance. Some septage haulers send customers a reminder every few years that their system is due for a pumping. Septage haulers and neighbors could negotiate a long-term agreement and schedule for pumping service. Some septage haulers will provide service at a reduced cost for each participating household since this approach reduces time and travel expenses for the hauler. Septage haulers could be encouraged to permit homeowners to charge maintenance and pump-out services on Master Card or Visa.

5. Public Meetings/Workshops. Assistance can be obtained from the U.S. Soil Conservation Service, Agricultural Extension Service, or regional planning agency to present a slide show and talk on septic system maintenance. If the meeting is widely publicized, perhaps following a brochure mailing, local school program, or press release, attendance can be enhanced.

Monitoring

A voluntary septic system inspection and maintenance program is difficult to monitor and enforce. Three monitoring options are presented below.

1. The board of health could perform random spot-checks around the town to get a general idea of the program's success.

2. The board of health could, along with a septic-system brochure, send a notice to all septic system owners, notifying them that their systems should be inspected, with a mail-back response postcard attached. The board of health would maintain a file of returned pumping-notice forms as a way of monitoring the number and frequency of septic system pumpouts.

3. All licensed pumpers in the town could be required to submit to the board of health a copy of all receipts, signed by homeowners, whose systems have been pumped. This type of monitoring system would require adoption of a health regulation or town bylaw, and would, therefore, be more appropriate as part of a mandatory inspection and maintenance program.

MANDATORY I & M PROGRAM

Although voluntary programs are relatively inexpensive and do not result in significant administrative burden to the town, a mandatory program may be necess to ensure compliance. A mandatory program may be particularly appropriate if continued reliance on septic systems as a means of sewage disposal is the community goal.

A community could adopt, through board of health regulations, or town bylaw, a mandatory septic tank maintenance program requiring registration and periodic inspection and cleaning of private disposal systems under the authority of state enabling statutes authorizing boards of health to adopt reasonable health regulations, regulations to prevent nuisances, and specific regulations governing subsurface sewage disposal. If the homeowner does not voluntarily consent to the inspection, a search warrant would have to be obtained. However, the "probable cause" standard for obtaining such a warrant could probably be met by showing the need for periodic inspection of certain facilities, in this case, septic tanks. There would be no need to show cause to believe that substandard conditions dangerous to the public are actually being maintained.

Developing a program requires coordinated private and municipal effort. The three model programs described below have one factor in common - benefits of successful local cooperation and implementation accrue directly to those whose money supports the program. Additional funding from the state and federal levels for such programs is recommended by the MAPC in order to encourage rapid adoption of local programs by removing the possible negative impacts on property tax rates. The expanded funding can be justified as less costly than sewering alternatives and more consistent with environmental and growth policy goals. The Federal Clean Waters Act of 1977 allows the use of 201 construction grant monies for privately owned treatment works serving one or more principal residences or small commercial establishments. However, the public body applying for the grant, generally the community, must meet certain requirements. These requirements, which have been promulgated by EPA Construction Grant regulations (40 CFR 25.918-1), state that the grant applicant shall:

"(a) Certify that the principal residence or small commercial establishment was constructed prior to December 27, 1977, and inhabited or in use on or before that date;

(b) Demonstrate in the facility plan that the solution chosen is cost-effective and selected in accordance with the cost-effectiveness guidelines for the construction grants program;

(c) Apply on behalf of a number-of individual units located in the facility planning area;

(d) Certify that public ownership of such works is not feasible and list the reason in support of such certification;

(e) Certify that such treatment works will be properly installed, operated and maintained and that the public body will be responsible for such actions;

(f) Certify prior to the Step 2 grant award that the project will be constructed, and an operation and maintenance program established to meet local, State, and Federal requirements including those protecting present or potential underground potable water sources;

(g) Establish a system of user charges and cost recovery;

(h) Obtain assurance (such as an easement or other covenant running with the land), prior to the Step 2 grant award, or unlimited access to each individual system at all times for such purposes as inspection, monitoring, construction, maintenance, operation, rehabilitation and replacement. An option will satisfy this requirement provided it is exercisable not later than the initiation of construction;

(i) Establish a comprehensive program for regulation and inspection of individual systems prior to EPA approval of the plans and specifications. Planning for this comprehensive program shall be completed as part of the facility plan. The program shall include as a minimum, periodic testing of water from existing potable water wells in the area. Where a substantial number of on-site systems exist, appropriate additional monitoring of the aquifers) shall be provided;

(j) Comply with all other applicable limitations and conditions which publicly-owned treatment works projects funded under this subpart must meet."

An effective inspection and maintenance program might be used to provide some of these assurances. The MAPC recommends that EPA, in funding 201 planning which will consider the use of individual or communal on-lot systems and septage disposal and treatment, require the study of mandatory inspection and maintenance programs.

A community can initiate an inspection/maintenance program by utilizing:

(1) Municipal Inspection with Publicly-Owned Pumping Service. Costs of staffing and operating a program with full minicipal control and equipment ownerships are shown below for a town with 3,000 existing septic systems.

	Subtotal	Yearly Total
Personnel - Inspection Team and Vehicles		
Chief Inspector: one (1) @ 16,00	16,000	16,000
Assistant Inspector: two (2) @ 13,000	26,000	26,000
Clerk-Secretary one (1) @ 10,000	10,000	10,000
Vehicles - Inspection Team		
Three vehicles in use 200 days/year		
Debt service 6-year vehicle life		2,500
Operating, maintenance, insurance 15,000 mi. each year @ $0.15/mi.	6,750	6,750
		$63,250
Septage Pumper Unit		
Personnel		
Operator-Driver: one (1) @ 12,000	12,000	12,000
Vehicle		
Pumping Truck $20,000		
Amortization and debt (8% interest) service over five years	6,440*	6,440*
Truck operation, maintenance, insurance 15,000 mi/yr. @ $0.25/mi.	3,750	3,750
		$22,190

* With federal repayment (Sec. 201) of 75 percent of purchase cost at 1/5 balance due per year, subtract $3,750/year..... $16,440

Three full-time inspectors are adequate during start-up. Fewer will be necessary once the program overcomes some initial barriers and each inspector completes more than the required two inspections per day. At this minimum rate, each system would be inspected once every 30 months. During the initial phase of the program, about one-half of the systems probably will require cleaning. Since the three inspectors will inspect only 1,200 systems per year to start, about 600 pumping jobs will be likely. Once the program is underway for three years, owners of septic systems will receive the following service and bills:

- costs of inspection will be distributed equally among all owners;
- costs of pumping will be borne only by those whose systems require pumping;
- inspection -- once every 30 months initially -- decreasing to every 20 months and costing about $30 per inspection;
- cleaning -- once every two to three years at $30 each job or $10-$15 additional per year.

Charges for septic system pumping are separated from inspection costs and billed to owners whose systems require cleaning service. Pumping costs vary inversely with the number of systems pumped each year. The chart below shows costs ranging from $20 each if 1,000 systems are serviced to $50 per cleaning when annual service totals 400 jobs. With federal assistance in purchasing the pumper truck, costs decrease about 20 percent and range from $16 to $41 per job.

SEPTIC TANK PUMPING COSTS

Number of Systems Serviced Annually	Approximate Cost to Owner Without Federal Assistance	With Federal Assistance
400	$50	$41
600	$34	$27
800	$25	$21
1000	$20	$16

A general town bylaw or board of health regulation should be adopted for implementation of the above program. The bylaw should contain the following provisions:

1. Authority and direction to the board of health to implement a program of septic system inspection and maintenance, and a brief purpose statement including the statutory authority of the board of health under Title Five of the State Environmental Code that septic systems be kept in proper working order.

2. Provision that failure to maintain a proper system would be deemed a nuisance, and authority of the board of health to make inspections and to require that an improperly maintained system be cleaned or repaired at the expense of the property owner.

3. Requirement that the board of health adopt rules and regulations to provide for:

   - the issuance of necessary permits
   - necessary inspections
   - maintenance of systems
   - pumping and disposal of the contents and
   - the establishment of reasonable fees to be paid by owners of properties included in the program.

This approach was prepared by the Southeastern Regional Planning and Economic Development District for the Town of Marion. A model bylaw is presented in Appendix B, and model regulations are shown in Appendix C.

(2) Municipal Inspection with Private Pumping Service. By utilizing services of private pumpers a town could avoid getting into the septage hauling business and perhaps take advantage of lower cost per pumping offered by an existing network of large private haulers. Private Massachusetts firms charge from $25 to $100 per pumping with most domestic jobs averaging about $40. Since costs of municipal inspection personnel would remain similar to those in the preceding program, the system owner will realize savings when private haulers can pump at lower costs than town-operated units. Since town-owned pumpers are totally user-supported, municipal cleaning costs may exceed average private fees if less than 600 tanks are pumped annually.

This approach requires the board of health to inspect systems at least once every three years. If the health agent finds the system isn't working properly, the board would order that it be repaired. Licensed septic tank pumpers would be responsible for issuing a receipt to owners showing the date of pumping and/or repair. The pumper would submit a copy of the receipt signed by the owner, to the board of health. These records would be used to show compliance with the program. A regular inspection program should be developed to keep track of which systems are inspected or pumped and when.

A model local health regulation requiring municipal inspection and private maintenance (pumping) is presented in Appendix D. The regulation is based on the authority of M.G.L. Chapter 111 and Title V of the Environmental Code. Without local acceptance of the program by adopting a bylaw, the board may find it lacks funds to enforce its regulations because there is no general recognition of the problem. This method does not provide for a fee system to cover costs. Instead, each individual would be responsible for paying for pumping.

(3) Private Inspection and Privately-Owned Pumping Equipment. With policy and administrative support by local officials, an inspection and maintenance program could be designed to be run by private firms. Such a program could be implemented by the adoption of a local health regulation

requiring owners to apply for a septic tank maintenance permit. The application form would include certification from a licensed hauler that the system has been inspected and pumped or not pumped because the volume of sludge and scum was less than 1/3 of the tank volume. Such a permit would be valid for a term of one, two or three years depending upon failure rates in the community and community resources and goals.

A disadvantage of this program is that a septic tank pumpers' permit does not provide authority to make a judgement on the condition of a septic system. Also, a private pumping firm paid to inspect septic systems may not be impartial in making a determination as to whether or not the system needs pumping.

A model local health regulation for private inspection and maintenance of septic systems is presented in Appendix E. This model was adopted from the Department of Community Affairs, Office of Local Assistance.

VI. SEPTAGE DISPOSAL PROGRAMS

One of the side effects of a septic system inspection and maintenance program is increased volumes of septage that must be disposed of. Septage disposal often creates problems of its own, so it is important to include provisions for septage disposal in an I & M program.

Under Title V of the State Environmental Code any person or firm engaged in the pumping or transport of the contents of any part of an individual sewage disposal system in a community must obtain a Septage Handler's Permit from the Board of Health. "The application for such permit shall state the site of the disposal, and such site and method of disposal must have been approved by the Department of Environmental Quality Engineering..." (regulation 2.3). Such permits expire at the end of the year in which they are issued.

While septage haulers have always been required to be permitted by local boards of health (although some local boards do not issue such permits) it is only since the new Title V went into effect (July 1, 1977) that the site of the disposal must be disclosed in the permit application. If local boards require full compliance with Title V more detailed information on septage disposal practices should be available as septage haulers seek to renew their permits. There will, of course, still be problems with unpermitted handlers and with handlers making false statements on the application. As to the latter problem it should be possible to check the veracity of statements made on the application to some extent. False statements could result in a $500 fine. To cut down on the number of unpermitted septage haulers in a community, it is recommended that along with information to homeowners on septic tank maintenance procedures, local boards also remind homeowners to be sure that their septage handler have a valid septage handler permit, and to report unpermitted handlers to the board of health, citing public health and environmental protection concerns as the reasons for this request. Certainly, this will not solve the problem but it should assist in identifying some non-complying handlers. If a mandatory inspection and maintenance program is implemented using private handlers, the program procedures themselves would provide adequate monitoring of compliance by septage handlers. Septage disposal must be considered in the same context as septic tank inspection and maintenance programs. An effective maintenance program will assist in assuring the proper operation of the individual septic tanks, and ensure that septage disposal facilities are designed and utilized to the maximum extent feasible, providing a method for assessing users of the facility their proportionate share of the costs of operating and maintaining the facility. The board of health conducting the inspection and maintenance program and the governmental entity controlling the treatment facility should have a clearly defined, preferably formalized, cooperative arrangement.

EXAMPLES OF LOCAL SEPTAGE-DISPOSAL PROGRAMS

As an example of one communtiy's approach, the town of Manchester owns its own septage disposal truck and provides residents an initial free pumping each year. Additional pumpings cost $15/hour with a minimum charge of $15. The board of health operates the truck in cooperation with the local DPW. While operation and maintenance costs for the truck have to be borne by the community and assessed to users of the service, the capital acquisition costs of the truck could be eligible for a 201 grant. Manchester estimates its operating expenses for 1977-78 to be $5,900. The cost of purchasing the truck in 1969 was $9,158.05. The cost-effectiveness of a town-owned truck versus private pumpers would have to be evaluated by each community.

The system used in the town of Acton may be appropriate for communities with in-town septage disposal facilities or cooperating out-of-town facilities. Acton requires all septage pumpers to obtain pumping permits (see Appendix F) from the town clerk. When the pumper pumps an individual system, the homeowner signs the permit and the pumper fills out the rest of the information.

Upon arrival at the septage disposal facility, the pumper presents the pumping permit to the disposal facility operator for permission to dump. The disposal site operator then returns the pumping permit to the board of health, where it is filed.

Thus, the board of health compiles a record of the frequency of pumping for each system and, furthermore, obtains better records on the amount of septage generated in the town. Where a community does not have an in-town facility, cooperation of the operators of out-of-town facilities would have to be obtained.

FUNDING OF SEPTAGE TREATMENT FACILITIES

Septage treatment facilities can be eligible for section 201 construction grants monies, as section 201(g) authorizes construction grants for "publicly-owned treatment works." Treatment works are defined as: "any devices and systems used in the storage, treatment, recycling, and reclamation of municipal sewage or industrial wastes of a liquid nature to implement Section 201 of this Act, or necessary to recycle or reuse water at the most economical cost...." and any works including site acquisition of the land.

The definition is also extended to "any other method or system of preventing, abating, reducing, storing, treating, separating, or disposing of municipal waste..." Thus, this definition for construction grants covers a wide range of measures, including various land treatment systems, communal septic systems, and septage disposal. Additionally, as noted earlier, the purchase of vehicles for servicing septic systems (i.e., honey wagons) could be eligible for 201 funding, if they could receive funding as determined by the state's 106 priority list.

Section 31D of Chapter 111 of the General Laws allows cities, towns and sewage districts to provide facilities for the receipt and disposal of septage, subject to the approval of DEQE. The DEQE commissioner may investigate such facilities to determine if they are adequate, and may recommend necessary action to protect the public. This section also authorizes any combination of cities, towns and a sewerage district to jointly provide septage disposal facilities. The towns of Wayland and Sudbury have recently entered into such an arrangement to construct a septage disposal facility.

VIII. ADMINISTRATION AND ENFORCEMENT OF A SEPTIC SYSTEM INSPECTION & MAINTENANCE PROGRAM VIA INTER-MUNICIPAL ARRANGEMENTS

New programs and regulations inevitably increase administrative burdens on a town. Some communities have shared administrative burdens with their neighbors to reduce staff time and cost and to foster uniform adoption and enforcement of environmental standards. The following discussion of intermunicipal health districts pertains to administration of Title V in general, but many of the ideas can be specifically applied to an inspection and maintenance program for the towns of Hingham, Norwell, and Rockland.

INTRODUCTION

On-site septic system problems, along with numerous other aspects of environmental sanitation can be very troublesome matters for local Boards of Health in small and medium-sized towns. Townspeople volunteer their spare time to serve as board members, and although some towns are lucky enough to have health professionals, engineers, or plumbing contractors serving on their health boards, many towns have no available expertise upon which to rely. Consequently, the local administration and enforcement of state health and environmental codes is variable among different towns, as well as within the same town from year to year as board members change. This can lead to confusion and frustration for board members and less than optimum regulation of health and environmental practices. Many septic system malfunctions currently may possibly have been prevented, had professional assistance been available to local health boards.

As septic system and other public health problems increase in growing Massachusetts towns, many local boards are turning to Registered Sanitarians, Registered Nurses, Medical Doctors, and Professional Engineers on a consultant basis to provide professional guidance in resolution of these problems. While these arrangements may be adequate, proposals and examples presented in this report provide a more coordinated and comprehensive framework for provision of environmental health services on a cooperative multi-town basis.

INTERMUNICIPAL VS. MUNICIPAL HEALTH SERVICES

In many areas of the country such as the south and west, the governmental structure is based primarily on the regional or county level. However, New England remains to this day steeped in the long tradition of home town rule utilizing the local town meeting and town boards as the major forums of municipal decision-making. Historically, the provision of environmental health services and public health services, in general, has tended to lag behind the provision of fire and police protection, schools and roads due to monetary constraints. And with increasing fiscal pressures, local officials are reluctant to provide additional municipal services which would increase local taxes. But at the same time, many towns are growing to the extent that these health services are sorely needed.

The intermunicipal employment of a qualified health officer offers retention of local authority by Boards of Health while providing professional environmental health expertise at a feasible cost to constituent towns. Commonly, in arrangements like this the Health Officer handles all of the routine inspection and enforcement tasks and then advises each local health board when important or

controversial decisions must be made. In this manner, each local health board retains its authority, while benefiting from the guidance of a public health professional. When the cost is split among several towns, each town benefits from a cost effective method of providing a wide range of services. In addition to on-site septic system regulations, these services can include bathing place, summer camp, and food service sanitation, rodent control, radiation surveillance, housing inspection, health education, as well as many others.

LEGISLATIVE BASIS

A state provision for the establishment of intermunicipal health officers has existed in the Commonwealth since 1929. Section 27A of Chapter 111 of the Massachusetts General Laws provides for the appointment of a health officer by two or more towns (see Appendix A). Numerous towns have availed themselves of this statute, forming small districts for the main purpose of sharing a competent public health professional. This legislation establishes "a joint committee composed of the Boards of Health of said towns" which determine the duties, compensation and relative amounts of service to be performed in each town by the health officer. However, of major importance to each constituent town, the law also provides that any employee including the health officer "shall be the employee of and responsible to the regularly constituted Board of Health of said town." This is the key provision which makes this type of intermunicipal health arrangement attractive to towns because each retains its own home town rule.

On a larger regional basis, any county can have legislation submitted to the Massachusetts General Court (state legislature) to establish a county health department. To date the only county health department in Massachusetts and indeed, all of New England is in Barnstable County on Cape Cod. This arrangement is probably best suited for highly rural counties or ones with few towns.

AVAILABILITY OF FUNDS

Fortunately, funding assistance is now available from the Commonwealth to towns wishing to establish an intermunicipal health district. Although the Department of Environmental Quality Engineering (DEQE) which is ultimately responsible for enforcement of Title V is not providing this assistance, the Department of Public Health (DPH) which is responsible for related environmental health matters such as food service, summer camp, and housing regulation is making assistance available. Through their Division of Local Health Services, DPH will provide a percentage of the costs of new intermunicipal health districts for the first four years of existence with the following schedule:

1st year - 75% Funding

2nd year - 60% Funding

3rd year - 40% Funding

4th year - 20% Funding

After the fourth year, new districts are expected to be well enough established to assume all costs themselves. The DPH is actively seeking towns who wish to enter into this type of arrangement and will provide guidance upon request through its regional offices.

AVAILABILITY OF MANPOWER

Most urban health departments in the New England states have competent professional staffs from which qualified applicants would probably emerge for intermunicipal positions. Upon hiring one of these individuals, a newly created health district would benefit from the experience of a more established public health agency.

Additionally, the Commonwealth is lucky to possess at the University of Massachusetts at Amherst one of the few doubly accredited environmental health programs in the country. This program at both the graduate and undergraduate levels in the Division of Public Health is accredited by both the National Accredidation Council for Environmental Health Cirricula and the American Public Health Association. Qualified manpower may also be found here.

HEM REGIONAL HEALTH DISTRICT.

The HEM Regional Health District serves the three towns of Hamilton, Essex and Manchester located northeast of Boston. It was formed July 1, 1972 under Chapter 111, Section 27A of the Massachusetts General Laws, previously described. Correspondingly, each municipal Board of Health retains its individual authority while receiving advice and recommendations from the designated Health Agent, Mr. Kenneth Capel. Mr. Capel, himself, constitutes the entire staff while utilizing the secretarial services of each of the three municipal boards. The three towns have a winter population of about 20,000 which increases to about 35,000 during the summer tourist season. With an operating budget of $22,000 per year this yields a per capita cost of $1.10 based upon the permanent population. For this cost, Mr. Capel, who is both a Registered Sanitarian and Certified Health Officer in the Commonwealth, provides enforcement of state housing, food service, and subsurface waste disposal codes, as well as provides liaison between member Boards of Health and other state and local agencies. Due to the abundance of impermeable clay soils in this area, well over half of this Health Agent's efforts are devoted to on-site sewage disposal problems.

NASHOBA ASSOCIATED BOARDS OF HEALTH.

The Nashoba Associated Boards of Health currently includes 16 member towns located in the Fort Devens area of north central Massachusetts. It was formed 52 years ago in 1930 upon recommendation by the U.S. Public Health Service following a survey investigating disease transmission problems in the area. The legislative basis upon which the association was formed is Chapter 111, Section 27A of the Massachusetts General Laws. All the member Boards of Health collectively from a joint committee established by the law to oversee the operations of the agency, however, in individual town health matters each municipal board retains its complete authority and may allow the agency to act in its behalf or

instruct the agency as to what specific course of action to employ. The professional staff advises each local board as a matter of course, but must abide by and carry out the decisions of each. Member towns are assessed a share of the costs on a population basis with a 1977 overall per capita cost of $3.16. Nashoba provides a very wide range of health services and employs a staff of over 30 people. The Director of Public Health, Mr. J. David Naparstek, oversees 14 Public Health Nurses, 1 Medical Social Worker, 1 Medical Director, 3 Dental Health Specialists, 8 Environmental Health Specialists, and 5½ clerical and bookkeeping workers. Mr. Naparstek attributes the time-tested success of this agency to two major aspects. First, the large array of available services at the reasonable per capita cost makes the economy of scale very attractive for the member towns; and second, while the agency acts on behalf of each local Board of Health, each one still retains its full power. This arrangement is attractive to local boards because they relinquish most of the routine hassles to the agency, while remaining in command to rule on more involved matters. Administration and enforcement of Title V constitutes one of the most important functions of the Environmental Health Division of this agency.

TRI-TOWN HEALTH DEPARTMENT.

The Tri-Town Health Department was formed in 1934, also under Section 27A of Chapter 111 and includes the three Berkshire County towns of Lee, Lenox, and Stockbridge constituting the only official intermunicipal health district in Western Massachusetts. The staff includes the Health Officer, Mr. Peter J. Kolodziej, plus a secretary and laboratory technician. Mr. Kolodziej provides a wide range of services including general administration, food service, summer camp, and housing code enforcement, as well as sub-surface sewage disposal regulation including inspection, plan-review, and licensing. As added feature of this agency is a DEQE certified water analysis laboratory which performs water tests on public and private water supplies, natural bathing waters, and public and private swimming pools.

BTW HEALTH DISTRICT.

Located north of Boston, the BTW Health District includes the towns of Boxford, Topsfield, and Wenham which comprise approximately 15,000 people. It was formed in 1968, also under Section 27A of Chapter 111. The professional staff is constituted by Mr. John Romanski, Health Director who is a Registered Sanitarian and Certified Health Officer. In addition to administration and enforcement of Title 5, Mr. Romanski provides vaccines, housing inspection, and food service, bathing place, and summer camp sanitation. He attributes the success of this program to two reasons; first, because towns are only bound into the district on a yearly basis and may choose to leave prior to commitment of the next year's budget; and second, because each local Board of Health retains its home town rule, as previously emphasized.

WELLESLEY, WESTON, NEEDHAM HEALTH DISTRICT.

Although this arrangement was also formed under Section 27A of Chapter 111, it is rather unique compared to the others. Each of these towns has its own health department with essentially separate staffs, but share a common health officer. Mr. Robert Heustis who is a Registered Sanitarian and a Certified Health Officer administers all three staffs, organizes clinics, and covers field work

during sanitarians' vacations, etc. This health district was formed in 1956 and includes a population of approximately 70,000. Each town bears the cost of its own staff while Mr. Heustis' expenditures are shared by the three towns on a population basis.

BARNSTABLE COUNTY HEALTH DEPARTMENT.

This agency is the sole county-based health department in Massachusetts. It covers all 15 towns of Barnstable County which comprise Cape Cod and was formed in 1926 through an enabling act of the Massachusetts General Court. It was suggested by the U.S. Public Health Service in hopes that other counties in Massachusetts would adopt this arrangement, however, none have to date. The Barnstable County Health Department, then, constitutes a unique type of regional health services agency in the Commonwealth. The Cape Cod area which has a year-round population of about 126,000 supports a summer population of almost half a million which makes environmental health concerns such as domestic sewage disposal, bathing place sanitation, and food service sanitation very important. The role of the Barnstable County Health Department in this work is essentially advisory and supportive to the individual Boards of Health within the county. The county staff of 16 full-time and 2 summer employees is directed by Ms. Esther Howes, County Health Officer and includes 1 Public Health Physical Therapist, 1 Dental Hygienist, 2 Public Health Nurses, 2 Medical Social Workers, 1 Senior Laboratory Technician, 3 Sanitarians, 2 summer assistants, and 5 clerks. The 1978 operating budget of $254,938 breaks down to a per capita cost of $2.02 based upon permanent population. On-site waste disposal problems are of specific concern on Cape Cod due to the sandy soil and possibility of groundwater contamination, so to carefully monitor these problems, Barnstable County has a well-equipped laboratory which is certified by both DEQE and DPH for extensive water analysis.

CONCLUSIONS

Intermunicipal or regional health districts are not new to Massachusetts, rather they are a time-tested successful method of dealing with environmental and other public health matters. From the water quality standpoint, they can and do serve as vehicles for more professional administration and enforcement of Title 5 than most Boards of Health can provide themselves. The advantages of these arrangements are numerous:

1) they provide professional environmental health expertise;

2) the costs for these services are shared;

3) towns need only belong yearly with the right to withdraw if desired; and

4) each local Board of Health retains its home town authority.

Growing Massachusetts towns should look seriously at these arrangements as a viable alternative for dealing with environmental and public health concerns.

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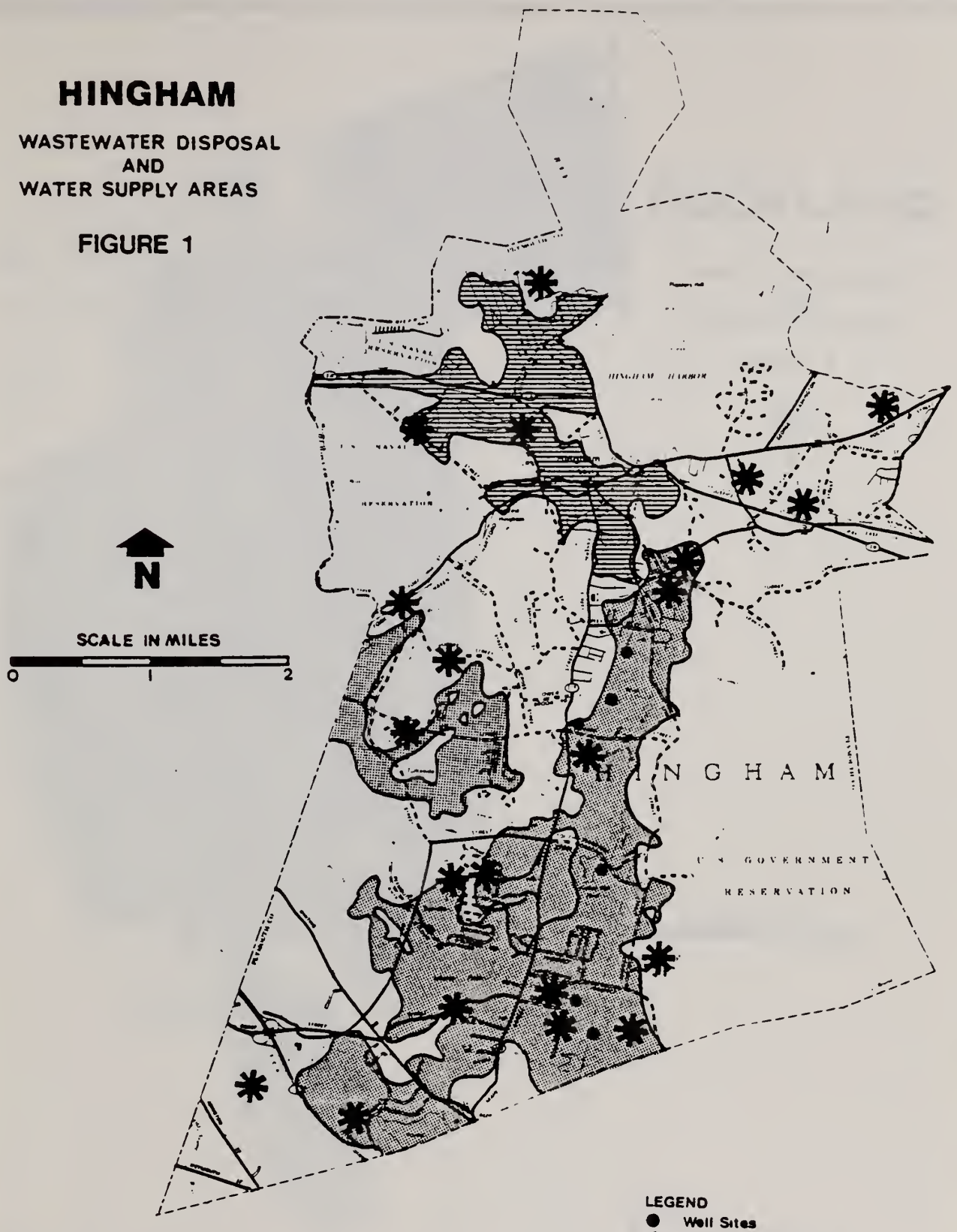
HINGHAM

WASTEWATER DISPOSAL AND WATER SUPPLY AREAS

FIGURE 1



SOURCES: MDPW Highway Series 1975
USDA No. Sa.

SOURCES: MDPW Highway Series, 1975.
USDA N & S Rivers/Well Watersheds, 1981.
USGS Hydrologic Atlas 1974.
LEA-Norwell Facilities Plan, 1982.
M&E-Rockland Sewerage Plan, 1982.
Hingham Facilities Plan, 1979.

ROCKLAND

WASTEWATER DISPOSAL AND WATER SUPPLY AREAS

FIGURE 2

N

SCALE IN MILES

0 1

LEGEND

- Well Sites
- Septic System Failures
- Sewered Areas – Existing & Proposed
- Areas Significant to Water Supplies – Aquifers & Watersheds

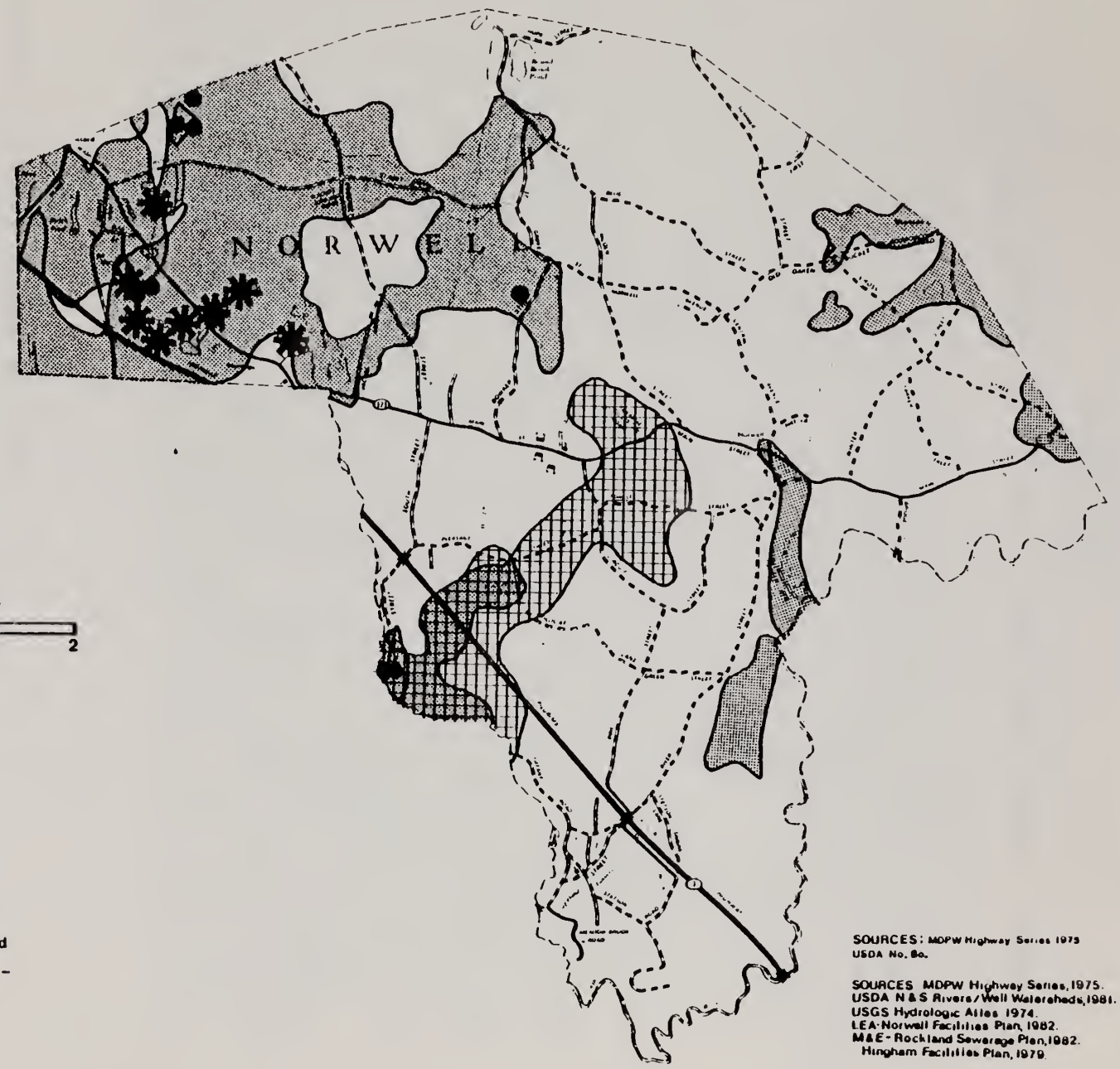
SOURCES: MDPW Highway Series 1975
USDA No. Sc.

SOURCES: MDPW Highway Series, 1975.
USDA N & S Rivers/Well Watersheds, 1981.
USGS Hydrologic Atlas 1974.
LEA-Norwell Facilities Plan, 1982.
M&E-Rockland Sewerage Plan, 1982.
Hingham Facilities Plan, 1979.

NORWELL

WASTEWATER DISPOSAL
AND
WATER SUPPLY AREAS

FIGURE 3



APPENDIX A
MASSACHUSETTS GENERAL LAWS
CHAPTER 111
PUBLIC HEALTH

§27A. Appointment of health officer by two or more towns; duties; compensatios; joint committee

Two or more towns may, by vote of each, form a district for the purpose of employing therein a health officer and necessary assistants and clerks, all of whom shall be appointed and may be removed by a joint committee composed of the boards of health of said towns. Persons so employed shall perform such duties and receive such compensation as said joint committee shall determine and, in so far as their duties in a given town are concerned, shall be the employees of and responsible to the regularly constituted board of health of said town. Said joint committee shall annually select a chairman and a secretary and shall determine the relative amount of service to be performed in each town of the district by persons employed hereunder. The treasurer of one of the towns of the district designated by the joint committee shall be treasurer of the district and shall give to the district a bond with a surety company authorized to transact business in the Commonwealth as surety, for the faithful performance of his duties as treasurer of the district, in such sum and upon such conditions as the joint committee may require. Said joint committee, annually in the month of December, shall estimate the amount of money required to pay the costs and expenses of the district for the following year, shall fix and determine the proportion of such costs and expenses to be paid by the respective towns thereof during such year and shall certify the amount so determined for each such town to the assessors thereof who shall include the same in the tax levy of such year. Upon order of the board of health of each such town, the town treasurer thereof shall from time to time, subject to the provisions of section fifty-two of chapter forty-one, pay to the district treasurer such sums not exceeding the amount certified by the joint committee as the town's share of the costs and expenses of the district. The district treasurer shall disburse the money so received, upon warrants approved by the health officer. Any constituent town may, by vote passed prior to December first in any year, withdraw from the district, such withdrawal to become effective on January first following. This section shall not apply in the county of Barnstable nor shall it authorize any city to join in forming such a district.

Amended by St. 1932, c. 209; St. 1963, c. 145

APPENDIX B

SUGGESTED GENERAL BY-LAW FOR MUNICIPAL INSPECTION AND MAINTENANCE OF ON-SITE SEWAGE DISPOSAL SYSTEMS

1. For the purpose of ensuring compliance with minimum standards for the health and safety of the inhabitants of the Town of , and to provide for the pumping and disposal of the contents of privies, cesspools and septic tanks as a public service, it shall be the duty of the Board of Health to examine, remove or prevent nuisances due to improper on-site dewage disposal systems, and the Board of Health is directed and authorized to implement a program of septic system inspection and maintenance, and disposal of the contents of such septic systems as an alternative to the system of common sewers and for the protection of surface and groundwater resources of the town from pollution.

2. The Board of Health shall adopt and enforce rules and regulations relative to such a program of inspection, maintenance and disposal of the contents of privies, cesspools, and septic tanks within the town, to issue necessary permits, and to establish reasonable fees to defray the costs of such program - such fees to be paid by the owners of properties included in the program.

3. The Board of Health shall have express authority under this by-law to make inspections of on-site sewage disposal systems, failure to maintain a proper system may be deemed a nuisance, and the Board of Health may require such system to be cleaned or repaired at the expense of the property owner.

APPENDIX C

SUGGESTED BOARD OF HEALTH REGULATIONS FOR MUNICIPAL INSPECTION AND MAINTENANCE OF ON-SITE SEWAGE DISPOSAL SYSTEMS

Section 1 - Authority

1.1. - These rules and regulations are adopted by the Board of Health of the Town of acting under the authority of Chapter 111 of the General Laws and Section of the By-Laws of the Town of for the purposes of a program of inspection and maintenance of cesspools and septic tank systems and the collection and disposal of the contents of such systems.

1.2. - To ensure compliance with the requirements of Title Five of the State Environmental Code, every owner, agent or occupant of premises in which there are private sewage disposal systems shall keep such systems in proper operational order including means of access for inspection and pumping, and shall have such systems cleaned or repaired at such times as ordered by the Board of Health.

Failure to comply with such orders, or to maintain such a system in a manner which will prevent objectionable conditions may be deemed a nuisance injurious to the public health.

2.0. - Inspection of Premises

2.1. - For the purpose of determining the proper operation of on-site sewage disposal systems within the Town of , such systems shall be subject to inspection by the Board of Health at intervals of not more than two years.

2.2. - The Board of Health shall maintain a record of each system inspected, including the address of the premises, name and address of the owner/occupant, description, and shall keep a record of the condition of any system or component thereof on the inspection date.

2.3. - The Board of Health shall report to the owner/occupant any system found to require improvement, repair, alteration or replacement and may make recommendations as to the appropriate type and size of system required.

APPENDIX D

MODEL HEALTH REGULATION (OR BYLAW) FOR MUNICIPAL INSPECTION AND PRIVATE MAINTENANCE OF ON-SITE SEWAGE DISPOSAL SYSTEMS

ARTICLE I. MAINTENANCE

Section 1. Septic Tank Pumping

The septic tanks of all on-site dewage disposal systems within the boundaries of the Town (City) of shall be pumped within three years of the effective date of this ordinance, and every third year thereafter. The Board of Health may require more frequent pumpings of any septic tank where he or she find such additional pumping necessary to the proper operation of the septic tank system.

Section 2. Proof of Compliance

All septic tank pumpers must be licensed in accordance with Title 5 of the State Environmental Code. Septic tank pumpers shall issue to owners of the septic tanks which they pump out a signed receipt showing the date of pumping, the name and address of the septic tank owner, and a description of the location and size of the septic tank. The owner shall sign the receipt, and the pumper shall submit a copy to the Board of Health. The receipt shall serve as proof of compliance with this Article.

ARTICLE II. INSPECTION

Section 1.

All on-site sewage disposal systems within the Town (City) of shall be inspected by the Board of Health within three years of the effective date of this ordinance and every three years thereafter to determine whether all components of the system are operating properly and are not malfunctioning.

Section 2.

Any system or component thereof which is found to be malfunctioning or a nuisance to public health, safety and welfare or to the quality of surface waters or groundwaters shall be ordered remedied in accordance with Title 5 of the State Environmental Code.

Section 3.

For any system which is serving an existing dwelling or structure and which must be upgraded, altered or replaced, a site investigation to determine the appropriate type and size of system in accordance with Title 5 of the State Environmental Code shall be conducted.

Section 4.

The Board of Health shall prepare a report for each system inspected, including the name and address of the on-site sewage disposal system owner, a description of the location and type of system, and whether or not the system or any of its components is operating improperly. For any system found to be operating improperly, the report shall also include a copy of the site investigation report as described in Section 3.

Section 5.

All violations of municipal and state health regulations and the State Plumbing and Environmental Code discovered during on-site sewage disposal system inspection shall be reported, and appropriate corrective and enforcement actions shall be taken by the municipality and/or state.

APPENDIX E

MODEL HEALTH REGULATIONS (OR BYLAW) FOR PRIVATE INSPECTION AND MAINTENANCE OF ON-SITE SEWAGE DISPOSAL SYSTEMS

ARTICLE I INSPECTION AND MAINTENANCE OF ON-SITE SEWAGE DISPOSAL SYSTEMS

Section 1. Purpose

It is recognized that proper maintenance of septic tanks will increase the useful life of all on-site sewage disposal systems which rely on soil absorption of septic tank effluent. To further the purpose of increased life of such on-site disposal systems and to protect the health, safety and welfare of the inhabitants of the Town (City of , the Town (City) of hereby establishes a septic tank maintenance permit program.

Section 2. Permit Required

No owner may occupy, rent, lease, live in or reside in, either seasonally or permanently, any building, residence or other structure serviced by a private domestic sewage treatment and disposal system unless the owner has a valid septic tank maintenance permit for that system issued in his/her name by the Board of Health. Owner is defined to mean a natural person, corporation, the state or any subdivision thereof.

Section 3. Fee

A fee of $ shall accompany each application for a septic tank maintenance permit.

Section 4. Permit Application

Application for a septic tank maintenance permit shall be made to the Building Commissioner on forms supplied at the Town Clerk's office. All applications shall state the owner's name and address, the address or location of the private sewer system and shall contain the following statement:

> "I certify that on day of , 19 , I inspected the septic tank located at the address stated on this application, and I (check one):
>
> _____ pumped all sludge and scum out of the septic tank, or
> _____ found that the volume of sludge and scum was less than 1/3 of the tank volume, and I did not pump the septic tank.

_____
Signature

_____
Sanitary License Number

Section 5. Issuance

The Board of Health shall issue a permit to the applicant upon receipt of the fee and a completed application, properly signed by a person licensed to service septic tanks and stating his sanitary license number. The permit shall include on its face all information contained in the application and shall contain the date of issuance.

Section 6. Validity

The permit issued under this section shall be valid for a period of two years from the date of issuance.

Section 7. Sale of Property

When property containing a private domestic sewer system is sold, the new property owner, prior to occupying, renting, leasing or residing in the building, residence or structure served by the system, shall make application for and receive a septic tank maintenance permit. However, the system may be used for a period not to exceed 30 days after making application for a permit.

APPENDIX F

Sample Pumping Permit

Permit Number ____

Property Owner's address _____

Town _____

Property Owner's Name _____

Septage Pumper's Name _____

Septage Pumper's Address & Phone Number _____

_____

Date _____

Time _____

Number of Gallons Pumped _____

_____ _____

Signature of Septage Pumper

Signature of Homeowner
Check if no one home _____

Septage Disposal Site Location _____.

_____